REMARKS

Claims 1-5, 7, 9-13, 15 and 17-26 are pending in the application. Claims 1-5, 7, 9-13, 15 and 17-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Konno et al. in view of Johnson, Jr. in further view of Hamano. Claims 1, 10, 18, 23, 25 and 26 have been amended. Reexamination and reconsideration of the application in view of the amendments and the following remarks is respectfully requested.

The present invention discloses a zoom lens system that creates and maintains color filtering throughout zooming. The zoom lens system includes a movable zoom lens group located between object space and an optical stop, and a stationary relay lens group located between the optical stop and an image plane. Previous inventions have disclosed zoom lens systems that could perform color filtering, but as the focal length changed, the effects of the color filtering would vary. The present invention solves this problem as recited in amended claims 1-5, 7, 9-13, 15 and 17-26 by using an optical filter element located within a zoom lens system such that the color filtering remains substantially constant over the full range of zooming. The optical element modifies the light passing through the zoom lens system to a predetermined spectrum of light rays. A coating on the surface of the optical element acts as an interference filter and produces the predetermined spectrum of light rays.

As FIG. 1 of the application illustrates, within a zoom lens system there are numerous locations where an optical element could be placed. However, to achieve uniform color filtering over the entire range of zooming, the placement of the optical element is of critical importance. It must be positioned in the relay lens group between the optical stop and the image plane in a location where the light rays are substantially collimated and perpendicular to the optical element and parallel to an optical axis for any modes of adjustment of the lens elements of the zoom lens system. Such a location is not trivial, because in many locations within the zoom lens system, the angle of the light rays with respect to each other, the optical element and the optical axis will vary as the lens elements are moved during zooming. Furthermore, some zoom lens systems may not even have a location with these characteristics. To achieve uniform color filtering over the entire range of zooming, the zoom lens system must have been designed to have a location where the light rays are

substantially collimated and perpendicular to the optical element and parallel to an optical axis for any modes of adjustment of the lens elements. In FIGs. 1 and 2, which conform generally to the amended claims, the optical element is located between two lens elements in the relay lens group of a substantially similar diameter that do not move with respect to each other.

By locating the optical element between these two lens elements of a substantially similar diameter that do not move with respect to each other, the light rays passing through the optical element will be substantially collimated and perpendicular to the optical element and parallel to an optical axis for any modes of adjustment of the lens elements.

Therefore, in summary, to achieve uniform color filtering over the entire range of zooming according to the present invention as represented in the amended claims, the optical element must be precisely placed (1) in a zoom lens system, (2) between an optical stop and an image plane, (3) sandwiched between two lens elements of a substantially similar diameter that do not move with respect to each other, and (4) along the optical axis in an area where the light rays are substantially collimated and perpendicular to the optical element, and substantially parallel to the optical axis, regardless of the movement of the zoom lens group.

Accordingly, all of the independent claims (claims 1, 10, 18, 23, 25 and 26) have been amended to contain these four limitations, and therefore all of the claims pending in the application as a whole (claims 1-5, 7, 9-13, 15 and 17-26) also include these four limitations.

Claims 1-5, 7, 9-13, 15 and 17-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Konno et al. in view of Johnson, Jr. in further view of Hamano. With the amendments to claims 1, 10, 18, 23, 25 and 26, it is respectfully submitted that this rejection has been overcome.

In particular, with regard to limitation (3), Konno discloses a low-pass filter, but it is not sandwiched between two lens elements of a substantially similar diameter that do not move with respect to each other. As a result, the light rays passing through the low-pass filter are not substantially collimated and perpendicular to the optical element and parallel to an optical axis

for any modes of adjustment of the lens elements, as in the claims of the present invention. The Examiner points out that Johnson, Jr. teaches adding collimation devices near an interference filter to collimate light. However, Johnson, Jr. does not teach collimation devices of (a) a substantially similar diameter that (b) do not move with respect to each other. In Hamano, the low pass filter is always adjacent to an aperture diaphragm, and is therefore not sandwiched between two lens elements. In fact, Hamano requires that the low-pass filter be placed where a change in the image separation width δ is the smallest, which is near the aperture diaphragm (see col. 4, lines 49-57 of Hamano). Therefore, Hamano actually teaches away from sandwiching the optical element between two lens elements. In addition, the lens elements in Hamano that are closest to the low-pass filter are not of a substantially similar diameter. Again, the result is that the light rays passing through the low-pass filter are not substantially collimated and perpendicular to the optical element and parallel to an optical axis for any modes of adjustment of the lens elements, as in the claims of the present invention.

Therefore, neither Konno, Johnson, Jr., nor Hamano, alone or in combination, discloses, teaches or suggests an optical element sandwiched between two lens elements of a substantially similar diameter, a limitation that is present in all pending claims. Therefore, it is respectfully submitted that the rejection of claims 1-5, 7, 9-13, 15 and 17-26 under 35 U.S.C. §103(a) as being unpatentable over Konno et al. in view of Johnson, Jr. in further view of Hamano has been overcome.

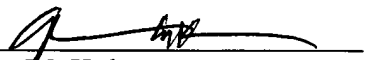
In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

If, for any reason, the Examiner finds the application other than in condition for allowance, Applicants request that the Examiner contact the undersigned attorney at the Los Angeles telephone number (213) 892-5752 to discuss any steps necessary to place the application in condition for allowance.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 490962001000.

Dated: May 25, 2005

Respectfully submitted,

By 

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